

Name: \_\_\_\_\_

# Factoring – Sum and Differences of Two Cubes (Version 2)

Directions: Please fully factor the following.

1.  $d^3 + w^3$   
 $\begin{array}{cc} d^2 & w^2 \\ d & w \end{array}$

$$(d + w)(d^2 - dw + w^2)$$

2.  $w^3 - r^3$   
 $\begin{array}{cc} w^2 & r^2 \\ w & r \end{array}$

$$(w - r)(w^2 + wr + r^2)$$

3.  $b^3 - 64$   
 $\begin{array}{cc} b^2 & 16 \\ b & 4 \end{array}$

$$(b - 4)(b^2 + 4b + 16)$$

4.  $g^3 + 8$   
 $\begin{array}{cc} g^2 & 4 \\ g & 2 \end{array}$

$$(g + 2)(g^2 - 2g + 4)$$

5.  $k^{33} + 1$   
 $\begin{array}{cc} k^{22} & 1 \\ k^{11} & 1 \end{array}$

$$(k^{11} + 1)(k^{22} - k^{11} + 1)$$

6.  $125x^3 + y^{15}$   
 $\begin{array}{cc} 25x^2 & y^{10} \\ 5x & y^5 \end{array}$

$$(5x + y^5)(25x^2 - 5xy^5 + y^{10})$$

7.  $8 - 27y^3$   
 $\begin{array}{cc} 4 & 9y^2 \\ 2 & 3y \end{array}$

$$(2 - 3y)(4 + 6y + 9y^2)$$

8.  $x^3y^6 + 216$   
 $\begin{array}{cc} x^2y^4 & 36 \\ xy^2 & 6 \end{array}$

$$(xy^2 + 6)(x^2y^4 - 6xy^2 + 36)$$

GCF  
 $\frac{8}{8}$  9.  $8x^{21} - 64$   
 $\begin{array}{cc} 8(x^{21} - 8) \\ x^{14} & 4 \\ x^7 & 2 \end{array}$

$$8(x^7 - 2)(x^{14} + 2x^7 + 4)$$

GCF  
 $\frac{8}{8}$  10.  $8a^{24} + 24y^3$   
 $\begin{array}{cc} 8(a^{24} + 3y^3) \\ a^{16} & 4y^2 \\ a^8 & 2y \end{array}$

$$8(a^8 + 2y)(a^{16} - 2a^8y + 4y^2)$$